Frozen Red Blood Cells

Frozen Red Blood Cells (FRBC) have long been an FDA-licensed product manufactured by military donor centers for use in contingency operations. Traditionally employed in locations where it would be difficult to provide a large inventory of FDA-licensed liquid red cell units, frozen blood can be used by hospitals both stateside and overseas. Unfortunately, this resource has gone largely unused due to a variety of factors; primarily a lack of information about the product and its uses.

History

The Navy first made use of Frozen Red Blood Cells in a combat zone in 1966 at Naval Station Hospital, Danang, Republic of South Vietnam. In a seven month period, over 450 FRBC units were transfused to casualties treated at the hospital.[1] During the Persian Gulf War, over 250 FRBC units were deglycerolized but none were used, partly because the technology at that time only allowed for a 24-hour shelf life of deglycerolized red blood cells.[2] In 2005, the ACP®215 device was developed by Haemonetics allowing for a 14 day shelf life of deglycerolized units. From 2008-2012, 860 deglycerolized red blood cell units have been transfused within CENTCOM with no transfusion reactions or complications.[3] The Joint Trauma System supports the use of deglycerolized blood within CENTCOM and has published a Clinical Practice Guideline to direct its use.[4] FRBC units are routinely deglycerolized at Landstuhl Regional Medical Center, Naval Hospital Okinawa, and Portsmouth Naval Medical Center.

Fresh & Clean

Red cells frozen at up to six days post-collection are as beneficial and may be more efficacious than blood units that, while not expired, are yet older than deglycerolized (thawed) red cells. Additionally, deglycerolized red cells are a washed product, and are therefore less likely to cause transfusion reactions. The thawing process, or deglycerolization, cleanses the blood of proteins and antibodies that may cause transfusion related reactions.

Available

Deglycerolized red blood cells are readily available to military hospitals. The Army, Navy and Air Force have centers set up which can deglycerolize frozen blood and ship the products to a requesting treatment facility. Deglycerolized red cells are a great option for supplementation of liquid red cell inventories of any hospital. To find out more about frozen red blood cells visit our website at: www.militaryblood.dod.mil

[1] Spinella PC, Dunne J, Beilman GJ, et al. Constant Challenges and evolution of US military transfusion medicine and blood operations in combat. Transfusion 2012; 52, 1146-53.

[2] Hess JR, Thomas, MJG. Blood use in war and disaster: lessons from the past century. Transfusion 2003; 43, 1622-33.

[3] Armed Services Blood Program Office, 7700 Arlington Blvd, Ste 5143, Falls Church, VA 22032

[4] http://www.usaisr.amedd.army.mil/clinical_practice_guidelines.html

All manufactured FRBC units are FDA licensed blood products and DoD facilities which perform deglycerolization are registered with the FDA.